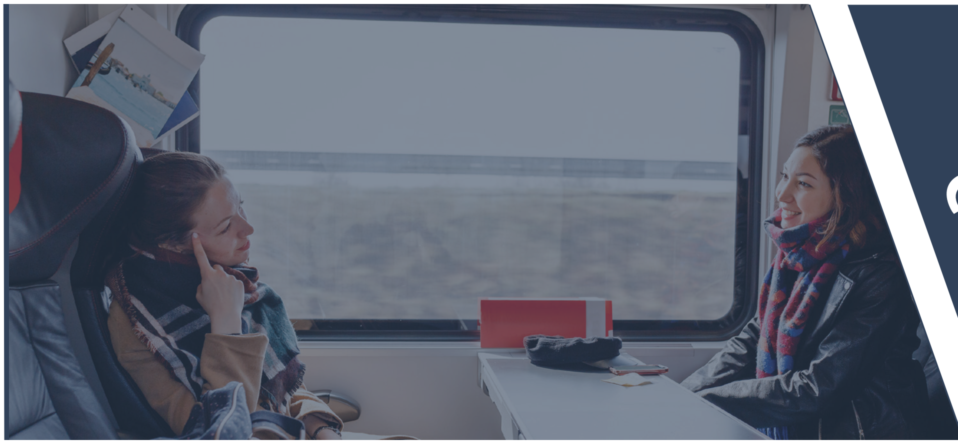
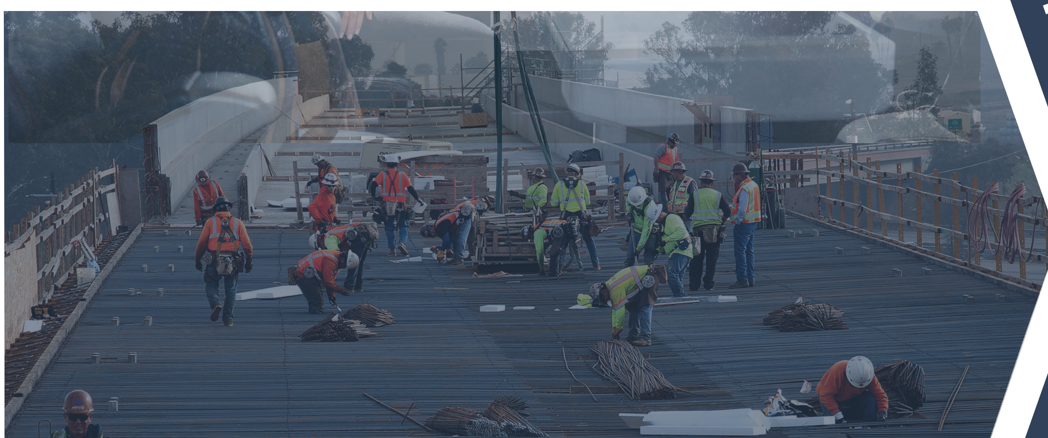
DRAFT 2018 Business Plan: Technical Supporting Document

High, Medium and Low Cash Flow Analysis

March 9, 2018





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March 9th, 2018

Russell Fong
California High-Speed Rail Authority
770 L. Street, Suite 1100
Sacramento, California 95814

Dear Mr. Fong:

Contract #HSR15-92-1 ("Contract")

Deliverable: Draft 2018 Business Plan Cash Flows and Ancillary Revenues

KPMG LLP is pleased to provide the following deliverables pursuant to our Contract:

- Draft 2018 Business Plan Cash Flows – High, Medium, and Low Cash Flows
- Draft 2018 Business Plan Ancillary Revenue Technical Documentation

The attached Cash Flows document provides a description of the potential cash flows from operations of the California high-speed rail system for the high, medium, and low ridership projections. The cash flow analysis presented in the attached document is based on assumptions related to revenues, operating and maintenance costs, and capital replacement costs provided by the California High-Speed Rail Authority ("Authority") and its consultants.

The attached Ancillary Revenue Technical Documentation outlines the assumptions used to derive a four percent high, medium, and low scenario ancillary revenue estimate for the high-speed rail system as approved by the Authority's executive leadership; this percentage is applied to farebox revenue forecasts provided by the Authority in order to calculate potential ancillary revenue proceeds. Previously in the 2016 Business Plan, the Authority determined ancillary revenues using a one percent estimate. Since then, KPMG LLP has worked with the Authority to identify additional revenue opportunities for the system. Potential ancillary revenue sources evaluated include parking, retail, telecommunications, energy, sponsorships, and advertising, among other categories.

The attached deliverables have been developed pursuant to our Contract awarded in June 2016. We look forward to continuing to work with the California High-Speed Rail Authority on financial, commercial, and strategic initiatives as design and construction proceed on the program.

Sincerely yours,

Thierry Prate

Attachments:

- *Draft 2018 Business Plan Cash Flows – High, Medium, and Low Cash Flows*
- *Draft 2018 Business Plan Ancillary Revenue Technical Documentation*

Draft 2018 Business Plan

High, Medium, Low Cash Flows

High, Medium, Low Cash Flows – Draft 2018 Business Plan

This document provides a description of the potential cash flows from operations of the high-speed rail system for the high, medium, and low ridership projections. Two versions of the net operating cash flows for Phase 1 through 2060 are provided in this appendix. The first is in Year of Expenditure ("YOE") dollars which include inflation to the year that funds are collected or spent. The second version provides the cash flows in 2017 dollars which removes the effect of inflation from all values. These estimates illustrate the potential net cash flows that may be available from operating the project that can be used for future development costs or financing purposes.

The Net Operating Cash Flow After Capital Replacement calculation begins with the net cash flow from operations (revenue less operations and maintenance costs ("O&M")). Revenues include those generated from high-speed rail passenger service (farebox revenue), feeder and connecting bus service, as well as ancillary revenues assumed to be four percent of total farebox collection (as discussed in the *Draft 2018 Business Plan Ancillary Revenue Technical Documentation*). Depreciation is a non-cash item and is excluded from this calculation. To account for capital replacement needs, the projected annual expenditures for repairing and replacing capital assets over time, including trains, equipment, facilities, and rail infrastructure, are then deducted to arrive at Net Operating Cash Flow After Capital Replacement. This represents the net cash flow available to be used for capital purposes and is before consideration of any debt service or investment returns. Net Operating Cash Flow After Capital Replacement is also the free cash flow available for capital financing purposes or other capital costs.

O&M and capital replacement cost forecasts were provided by the Authority's technical consultants. Consistent with the methodology previously used in the 2016 Business Plan, assumed operator profit is included in the discount rates applied to Net Operating Cash Flow After Capital Replacement in the monetization analysis.

The Net Operating Cash Flow After Capital Replacement included herein are based on assumptions related to revenues, operating and maintenance costs, and capital replacement costs provided by the Authority's technical consultants as described in the Draft 2018 Business Plan. The estimates assume that Silicon Valley to Central Valley Line (San Francisco to Bakersfield) will start full-year operations in 2029, with Phase 1 (San Francisco to Anaheim) opening in 2033.

Inflation assumptions were provided by the Authority's technical consultants and are as follows:

	2017	2018-2025	2026-2060
Revenues	Base Year	3.00%	3.00%
O&M	Base Year	3.00%	3.00%
Capital Replacement	Base Year	2.25%	3.00%

Source: Draft 2018 Business Plan Operations & Maintenance Cost Model Documentation and Capital Cost Basis of Estimate Report

High, Medium, Low Cash Flows

(Year of Expenditure $)

Exhibit 1. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case

$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	259,194	704	1,012	1,346	1,708	3,320	3,971	4,675	5,435	6,256	6,547
Less: O&M	(73,387)	(396)	(452)	(505)	(564)	(1,398)	(1,497)	(1,616)	(1,732)	(1,867)	(1,928)
Net Cash Flow from Operations	185,806	308	560	841	1,144	1,922	2,474	3,058	3,703	4,389	4,619
Less: Capital Replacement	(17,331)	-	-	-	-	-	-	-	-	(0)	(57)
Net Operating Cash Flow After Capital Replacement	168,475	308	560	841	1,144	1,922	2,474	3,058	3,703	4,389	4,562

Exhibit 1. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case (continued)

$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	6,851	7,169	7,421	7,682	7,952	8,232	8,521	8,821	9,131	9,452	9,784
Less: O&M	(1,978)	(2,053)	(2,128)	(2,174)	(2,254)	(2,306)	(2,401)	(2,478)	(2,529)	(2,619)	(2,713)
Net Cash Flow from Operations	4,873	5,116	5,293	5,508	5,698	5,926	6,120	6,343	6,602	6,832	7,070
Less: Capital Replacement	(59)	(7)	(8)	(70)	(184)	(1,183)	(798)	(40)	(266)	(4,268)	(1,557)
Net Operating Cash Flow After Capital Replacement	4,814	5,109	5,286	5,438	5,515	4,742	5,322	6,303	6,336	2,564	5,513

Exhibit 1. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case (continued)

$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	10,128	10,484	10,852	11,234	11,629	12,037	12,460	12,898	13,352	13,821	14,307
Less: O&M	(2,774)	(2,875)	(2,942)	(3,057)	(3,161)	(3,227)	(3,342)	(3,462)	(3,541)	(3,651)	(3,764)
Net Cash Flow from Operations	7,354	7,609	7,910	8,177	8,467	8,810	9,118	9,436	9,811	10,170	10,543
Less: Capital Replacement	(1,037)	(721)	(116)	(151)	(205)	(70)	(53)	(1,137)	(1,780)	(1,804)	(1,762)
Net Operating Cash Flow After Capital Replacement	6,318	6,888	7,795	8,025	8,262	8,741	9,065	8,299	8,031	8,366	8,781

Note: Numbers may not foot due to rounding

Exhibit 2. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case

$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	182,764	498	715	951	1,207	2,343	2,801	3,297	3,833	4,411	4,616
Less: O&M	(67,065)	(362)	(413)	(462)	(516)	(1,278)	(1,368)	(1,477)	(1,583)	(1,706)	(1,762)
Net Cash Flow from Operations	115,699	135	302	489	691	1,065	1,433	1,820	2,250	2,705	2,854
Less: Capital Replacement	(15,912)	-	-	-	-	-	-	-	-	(0)	(52)
Net Operating Cash Flow After Capital Replacement	99,787	135	302	489	691	1,065	1,433	1,820	2,250	2,705	2,802

Exhibit 2. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case (continued)

$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	4,831	5,055	5,233	5,417	5,607	5,804	6,008	6,219	6,438	6,664	6,898
Less: O&M	(1,808)	(1,877)	(1,945)	(1,987)	(2,060)	(2,107)	(2,195)	(2,264)	(2,311)	(2,394)	(2,480)
Net Cash Flow from Operations	3,023	3,178	3,288	3,430	3,547	3,697	3,814	3,955	4,127	4,271	4,419
Less: Capital Replacement	(54)	(7)	(7)	(64)	(169)	(1,087)	(732)	(37)	(244)	(3,919)	(1,429)
Net Operating Cash Flow After Capital Replacement	2,969	3,172	3,281	3,366	3,379	2,610	3,081	3,918	3,882	352	2,989

Exhibit 2. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case (continued)

$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	7,141	7,392	7,652	7,921	8,199	8,487	8,786	9,094	9,414	9,745	10,088
Less: O&M	(2,535)	(2,627)	(2,689)	(2,794)	(2,889)	(2,949)	(3,054)	(3,164)	(3,236)	(3,336)	(3,440)
Net Cash Flow from Operations	4,606	4,765	4,963	5,127	5,310	5,538	5,732	5,930	6,178	6,409	6,648
Less: Capital Replacement	(952)	(662)	(106)	(139)	(188)	(64)	(49)	(1,044)	(1,634)	(1,656)	(1,618)
Net Operating Cash Flow After Capital Replacement	3,655	4,103	4,857	4,988	5,122	5,474	5,683	4,887	4,544	4,753	5,030

Note: Numbers may not foot due to rounding

Exhibit 3. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case

$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	157,068	400	575	765	970	1,968	2,373	2,812	3,286	3,799	3,975
Less: O&M	(64,281)	(347)	(395)	(442)	(494)	(1,225)	(1,311)	(1,416)	(1,517)	(1,635)	(1,689)
Net Cash Flow from Operations	92,787	53	179	323	477	743	1,062	1,396	1,769	2,163	2,286
Less: Capital Replacement	(14,433)	-	-	-	-	-	-	-	-	(0)	(47)
Net Operating Cash Flow After Capital Replacement	78,354	53	179	323	477	743	1,062	1,396	1,769	2,163	2,239

Exhibit 3. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case (continued)

$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	4,160	4,353	4,506	4,665	4,829	4,998	5,174	5,356	5,544	5,739	5,941
Less: O&M	(1,733)	(1,799)	(1,864)	(1,904)	(1,974)	(2,020)	(2,103)	(2,170)	(2,215)	(2,294)	(2,377)
Net Cash Flow from Operations	2,427	2,555	2,642	2,760	2,854	2,978	3,071	3,186	3,329	3,445	3,564
Less: Capital Replacement	(49)	(6)	(6)	(58)	(153)	(986)	(664)	(33)	(222)	(3,555)	(1,297)
Net Operating Cash Flow After Capital Replacement	2,378	2,548	2,636	2,702	2,702	1,993	2,406	3,152	3,107	(110)	2,267

Exhibit 3. Net Operating Cash Flow After Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case (continued)

$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	6,150	6,366	6,589	6,821	7,061	7,309	7,566	7,832	8,107	8,392	8,687
Less: O&M	(2,429)	(2,518)	(2,577)	(2,678)	(2,769)	(2,827)	(2,927)	(3,033)	(3,102)	(3,198)	(3,297)
Net Cash Flow from Operations	3,720	3,847	4,012	4,143	4,292	4,482	4,639	4,799	5,005	5,194	5,390
Less: Capital Replacement	(863)	(600)	(96)	(126)	(171)	(58)	(44)	(947)	(1,482)	(1,502)	(1,467)
Net Operating Cash Flow After Capital Replacement	2,857	3,247	3,916	4,017	4,121	4,424	4,594	3,852	3,523	3,692	3,923

Note: Numbers may not foot due to rounding

High, Medium, Low Cash Flows

(2017 $)

Exhibit 4: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case

$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	104,269	494	689	890	1,096	2,069	2,402	2,746	3,100	3,464	3,519
Less: O&M	(30,140)	(278)	(308)	(334)	(362)	(871)	(905)	(949)	(988)	(1,034)	(1,036)
Net Cash Flow from Operations	74,129	216	381	556	734	1,198	1,497	1,797	2,112	2,430	2,483
Less: Capital Replacement	(6,634)	-	-	-	-	-	-	-	-	(0)	(33)
Net Operating Cash Flow After Capital Replacement	67,495	216	381	556	734	1,198	1,497	1,797	2,112	2,430	2,450

Exhibit 4: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case (continued)

$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	3,576	3,633	3,651	3,669	3,687	3,706	3,724	3,743	3,762	3,781	3,799
Less: O&M	(1,032)	(1,040)	(1,047)	(1,038)	(1,045)	(1,038)	(1,050)	(1,051)	(1,042)	(1,048)	(1,054)
Net Cash Flow from Operations	2,543	2,592	2,604	2,631	2,642	2,668	2,675	2,692	2,720	2,733	2,746
Less: Capital Replacement	(33)	(4)	(4)	(35)	(90)	(565)	(370)	(18)	(116)	(1,810)	(641)
Net Operating Cash Flow After Capital Replacement	2,511	2,588	2,600	2,595	2,552	2,103	2,305	2,674	2,604	923	2,105

Exhibit 4: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case (continued)

$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	3,818	3,838	3,857	3,876	3,895	3,915	3,934	3,954	3,974	3,994	4,014
Less: O&M	(1,046)	(1,052)	(1,046)	(1,055)	(1,059)	(1,049)	(1,055)	(1,061)	(1,054)	(1,055)	(1,056)
Net Cash Flow from Operations	2,773	2,785	2,811	2,821	2,836	2,865	2,879	2,893	2,920	2,939	2,958
Less: Capital Replacement	(414)	(280)	(44)	(55)	(73)	(24)	(18)	(369)	(562)	(553)	(524)
Net Operating Cash Flow After Capital Replacement	2,358	2,506	2,768	2,766	2,764	2,841	2,861	2,523	2,358	2,386	2,434

Note: Numbers may not foot due to rounding

Exhibit 5: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case

$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	73,526	349	487	629	775	1,460	1,695	1,937	2,186	2,442	2,481
Less: O&M	(27,544)	(254)	(281)	(305)	(331)	(796)	(827)	(868)	(903)	(945)	(947)
Net Cash Flow from Operations	45,982	95	206	323	444	664	867	1,069	1,283	1,498	1,534
Less: Capital Replacement	(6,091)	-	-	-	-	-	-	-	-	(0)	(30)
Net Operating Cash Flow After Capital Replacement	39,891	95	206	323	444	664	867	1,069	1,283	1,498	1,504

Exhibit 5: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case (continued)

$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	2,521	2,561	2,574	2,587	2,600	2,613	2,626	2,639	2,652	2,666	2,679
Less: O&M	(943)	(951)	(957)	(949)	(955)	(949)	(959)	(961)	(952)	(957)	(963)
Net Cash Flow from Operations	1,578	1,610	1,617	1,638	1,645	1,664	1,667	1,678	1,700	1,708	1,716
Less: Capital Replacement	(30)	(4)	(4)	(32)	(83)	(519)	(339)	(17)	(107)	(1,662)	(589)
Net Operating Cash Flow After Capital Replacement	1,548	1,607	1,614	1,606	1,562	1,146	1,327	1,662	1,593	46	1,127

Exhibit 5: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case (continued)

$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	2,692	2,706	2,719	2,733	2,747	2,760	2,774	2,788	2,802	2,816	2,830
Less: O&M	(956)	(962)	(956)	(964)	(968)	(959)	(964)	(970)	(963)	(964)	(965)
Net Cash Flow from Operations	1,737	1,744	1,764	1,769	1,779	1,801	1,810	1,818	1,839	1,852	1,865
Less: Capital Replacement	(380)	(257)	(40)	(51)	(67)	(22)	(16)	(339)	(516)	(507)	(481)
Net Operating Cash Flow After Capital Replacement	1,356	1,487	1,724	1,718	1,712	1,779	1,793	1,479	1,323	1,344	1,384

Note: Numbers may not foot due to rounding

Exhibit 6: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) LOW case

$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	63,111	281	391	505	623	1,226	1,436	1,652	1,874	2,103	2,137
Less: O&M	(26,400)	(243)	(269)	(292)	(317)	(763)	(793)	(832)	(865)	(906)	(908)
Net Cash Flow from Operations	36,712	37	122	213	306	463	643	820	1,009	1,198	1,229
Less: Capital Replacement	(5,525)	-	-	-	-	-	-	-	-	(0)	(27)
Net Operating Cash Flow After Capital Replacement	31,187	37	122	213	306	463	643	820	1,009	1,198	1,202

Exhibit 6: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) LOW case (continued)

$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	2,171	2,206	2,217	2,228	2,239	2,250	2,261	2,273	2,284	2,296	2,307
Less: O&M	(904)	(911)	(917)	(910)	(915)	(909)	(919)	(921)	(913)	(918)	(923)
Net Cash Flow from Operations	1,267	1,294	1,300	1,318	1,324	1,341	1,342	1,352	1,371	1,378	1,384
Less: Capital Replacement	(27)	(3)	(3)	(29)	(75)	(470)	(308)	(15)	(97)	(1,507)	(534)
Net Operating Cash Flow After Capital Replacement	1,240	1,291	1,297	1,289	1,248	870	1,034	1,337	1,275	(130)	850

Exhibit 6: Net Operating Cash Flow After Capital Replacement through Phase 1 (2017 dollars in millions) LOW case (continued)

$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	2,319	2,330	2,342	2,353	2,365	2,377	2,389	2,401	2,413	2,425	2,437
Less: O&M	(916)	(922)	(916)	(924)	(928)	(919)	(924)	(930)	(923)	(924)	(925)
Net Cash Flow from Operations	1,403	1,408	1,426	1,430	1,438	1,458	1,465	1,471	1,490	1,501	1,512
Less: Capital Replacement	(345)	(233)	(36)	(46)	(61)	(20)	(15)	(308)	(468)	(460)	(436)
Net Operating Cash Flow After Capital Replacement	1,058	1,175	1,390	1,383	1,377	1,438	1,450	1,164	1,022	1,041	1,076

Note: Numbers may not foot due to rounding

Draft 2018 Business Plan

Ancillary Revenue Technical Documentation

Ancillary Revenue Technical Documentation – Draft 2018 Business Plan

Overview of Ancillary Revenues

The Authority's business plans contemplate the potential for the high-speed rail system to generate revenues ancillary to farebox revenues to support the system's financial feasibility. These ancillary revenues (i.e. non-farebox operating revenues) are captured in the Draft 2018 Business Plan as a percentage of farebox revenues.

Developing a List of Ancillary Revenue Opportunities

The Authority regularly evaluates opportunities to pursue ancillary revenues. In prior business plans, the Authority included planning assumptions indicating ancillary revenues could range from one to four percent of farebox revenues. Since the publication of the 2016 Business Plan, the Authority has undertaken more extensive research and market analysis of potential ancillary revenue sources from the system's real property, rights of way, and ridership.

The methodology to calculate an ancillary revenue estimate for the Draft 2018 Business Plan follows the guiding principles and values driving the Authority's advancement of the high-speed rail program. Ancillary revenue opportunities potentially available to the Authority were identified and screened. The screening process included:

- **Research into peer agencies and the airline industry,** which enabled the sourcing of creative commercial options, identification of a potential range of benefits, and identification of benchmarks from which estimates could be evaluated; and
- **An Authority review process** that identified and narrowed the field of available opportunities, as well as determined order of magnitude estimates for each opportunity.

Categorizing the Ancillary Revenues

The Authority's ability to access and generate revenue from an ancillary revenue opportunity is dependent, in part, on the ease of implementation and alignment with its policies and regulatory environment.

The ancillary revenue opportunities were grouped into four stand-alone categories (i.e. Category 1, Category 2, Category 3, and Category 4), which correspond to their relative implementation profile. The revenue categories were defined as follows:

- **Category 1 – Line of Site Opportunities:** Category 1 ancillary revenues represent the most directly accessible revenue sources given their low complexity of implementation.
- **Category 2 – Joint Development/Partnership:** Category 2 ancillary revenues represent the next most accessible grouping. Each contemplates or materially is tied to a partnership with a public partner, developer or third-party to commercially develop station sites, right-of-way, and/or other Authority-owned parcels. Consequently, the feasibility of achieving revenue related to these sources hinges on the Authority to enter into commercial agreements.
- **Category 3 – Public Tools for Financing/Funding Development:** Category 3 ancillary revenues represent potential tools for financing and funding development at or within a certain radius of the station sites.
- **Category 4 – New Tax/Fee:** Category 4 ancillary revenues represent the least accessible set of options based on the relevant approvals required for a new tax or fee.

Shortlisting and Benchmarking Revenue Opportunities for the Draft 2018 Business Plan

Category	Opportunity
1	Advertising: Billboard
1	Advertising: Station-level
1	Advertising: Rolling stock
1	Baggage Fees
1	Excess Land
1	Parking Fees
1	Retail: Station-level
1	Sponsorship: Station
1	Sponsorship: System
1	Telecommunications: Fiber*
1	Telecommunications: Towers
1	Web-based Advertising
Twelve (12) Category 1 ancillary revenue opportunities	

Category	Opportunity
2	Revenues from Ground Leases
One (1) Category 2 ancillary revenue opportunity	

Category	Opportunity
3	Not considered for inclusion in the Draft 2018 Business Plan**
4	Not considered for inclusion in the Draft 2018 Business Plan**
Zero (0) Category 3 and 4 ancillary revenue opportunities	

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* While the Authority believes there is market support for the Telecommunications: Fiber revenue opportunity, it likely requires some changes to existing legislation or executive action for revenues to be realized by the Authority.

** Category 3 and 4 opportunities are excluded from this analysis due to their uncertainty and the high degree of complexity associated with realizing such revenues.

Figure 1 – List of Ancillary Revenue Opportunities Evaluated for Draft 2018 Business Plan

The Authority undertook a review of various ancillary revenue opportunities, and down-selected thirteen streams for inclusion in the Draft 2018 Business Plan. Down-selection of these thirteen opportunities was informed by the opportunities' ease of implementation, as well as a desire to arrive at a reasonable and conservative estimate for planning purposes. Opportunities potentially requiring legislative action and/or posing significant risk were excluded. For the purpose of estimating ancillary revenue to inform the Draft 2018 Business Plan, the thirteen ancillary revenue opportunities outlined in Figure 1 were included.

For each of the ancillary revenue opportunities included in the Draft 2018 Business Plan, the Authority analyzed peer agencies and comparable operators (both in the transit and airline sectors), as well as local market conditions, to establish a set of low, medium, and high order of magnitude benchmarks to estimate the ancillary revenue potential. Each of these benchmarks was applied against a base metric such as ridership, number of stations, or right of way. By way of example, transit agencies and airport advertising contracts were researched to determine a low, medium, and high benchmark for advertising revenue per passenger. These benchmarks were then applied against the system's annual ridership forecasts provided by the Authority's technical consultants. Each of the ancillary revenues were calculated on a net ancillary revenue basis, taking into account the costs of their pursuit. Revenue from each opportunity incorporated key timing parameters and drivers of project phases, including the timing of pre-operations, operations, and mature operations periods for the Silicon Valley to Central Valley Line and Phase 1 segments.

Ancillary Revenue Analysis Results

The analysis for the Draft 2018 Business Plan estimates ancillary revenues available to the Authority assuming a delivery of the Silicon Valley to Central Valley Line segment (San Francisco to Bakersfield) in 2029, with the balance of Phase 1 delivered in 2033, and offers estimates in the form of revenues available and as a percentage of farebox revenue assuming high, medium, and low ridership as forecasted by the Authority's technical consultants. The results of the analysis are presented as follows:

	Low Ridership (%)	Low Ridership ($'MM 2017)	Medium Ridership (%)	Medium Ridership ($'MM 2017)	High Ridership (%)	High Ridership ($'MM 2017)
Cumulative Farebox Revenues ($'MM 2017)	60,635		70,638		100,174	
Low Cumulative Ancillary Revenue Benchmark	1.1%	685	1.0%	699	0.7%	719
Medium Cumulative Ancillary Revenue Benchmark	4.1%	2,502	4.1%	2,878	3.4%	3,399
High Cumulative Ancillary Revenue Benchmark	7.2%	4,376	7.2%	5,114	6.1%	6,136

Figure 2 – Ancillary Revenue Benchmarks for Silicon Valley to Central Valley Line to Phase 1 System. Ancillary totals in table are raw model outputs used to derive a four percent estimate, and reflect opportunities through 2060 (inclusive of pre-operations, operations, and mature operations periods).

The analysis yielded a range of ancillary revenues from one to seven percent of farebox revenues. Based on these results, and consistent with the medium ancillary revenue benchmarks, ***a flat four percent (4.00%) of farebox revenues will be applied as the ancillary revenue estimate*** in each year of operations for the high, medium, and low ridership scenarios in the Draft 2018 Business Plan.